

FOREST CONTROL

A
13.2:
In 81
75

by CONTINUOUS INVENTORY

"Today I have grown taller from walking
with the trees."

...Karle Wilson

Milwaukee, Wis. June, 1960 No. 75

FOREST MANAGEMENT IN SWITZERLAND THE CHECK METHOD IS PERMANENT

Part 2

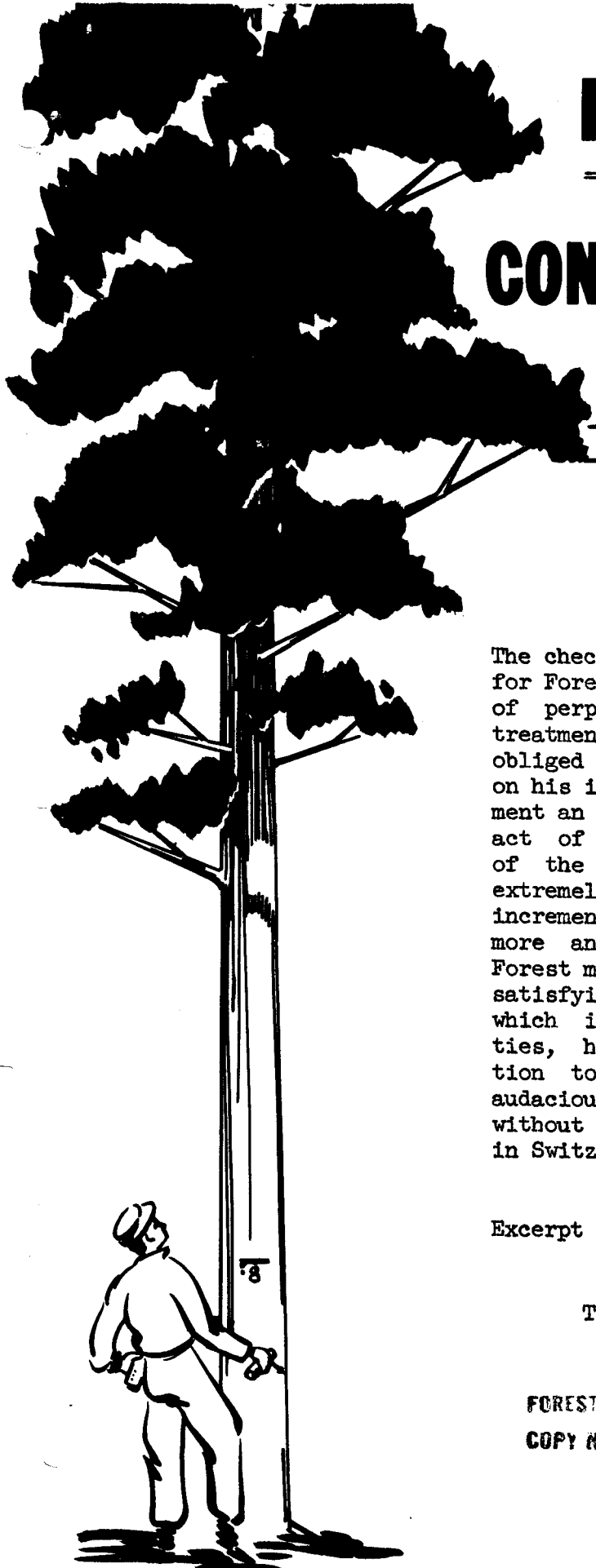
The check method will undoubtedly remain the basis for Forest Management in Switzerland. This method of perpetual investigation gives silvicultural treatment an experimental basis. The forester is obliged to consider the facts and not to speculate on his interventions. Furthermore, it makes management an instrument of self-criticism, and not an act of authority. The necessity for development of the check method is irrefutable; it contains extremely rich and varied possibilities. The value increment, besides the volume increment, holds more and more interest for the forest economy. Forest management will certainly find a means of satisfying these new requirements. Great variety, which in Switzerland is the nature of all activities, has sometimes permitted primitive exploitation to survive, but it has also allowed the audacious spirits to make innovations and to work without hindrance. The future of Forest Management in Switzerland can be considered with optimism.

Excerpt from "Die Forsteinrichtung in der Schweiz"
By A. Kurth, Zurich

Translation by W. W. Jeffrey, 1954

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COMPOSITE TREE STATUS CODES FOR CFI PLOT WORK

A new system of coding tree status has been developed by Otis Hall and Tom Beers at Purdue University's Department of Forestry and Conservation. The composite code applies a variety of specific code numbers, but the principle and flexibility of the system have been clearly demonstrated on several projects.

On the next page is explained a standard coding for the system that seems to fit all CFI inventories encountered up to the present. It consists of a series of code numbers for 8 different tree status classes. Applied to the trees recorded at each measurement, including the first, the codes for any two measurements give an indication of the change in status for each tree during that period. There may be as many as 33 of these combination classes, but generally there are only 10 or 15 on any particular inventory control project. The most common tree status classes are starred on the listing on page 3.

It is important to record tree status at each measurement of the plots. Tree status tells us which of the trees are of pulpwood, sawlog, or pre-commercial size. It designates cull, mortality and cut trees. There is a code number for all trees taken in new plots and for new or ingrowth trees taken in old or existing plots. There is also a code for trees in plots discontinued. There may also be a code for writeoff trees if this classification is used.

The new status codes are helpful in data processing. It is possible, with pre-punched status codes, to sort and compile volume and growth information for 8 different tree status classes and combinations thereof, and to show the contribution each makes to the final net growth of the forest. This important analysis encourages an intensification of silvicultural treatment, and is a more certain basis for the control of the cut. To select out the numerous tree status classes without pre-coding them in the woods requires sorting on many fields in the tree detail cards, and the ganging in of codes for every different status. Pre-coding in the woods is far better than post-coding in this manner in the machines.

The new tree status coding system is a great help to the cruiser. It is simple for him to learn the 8 essential code numbers, and to record them at each measurement so that the data processor later may combine successive records to measure periodic changes. It is far better for the machine to combine these codes than for the cruiser to combine them in the woods.

CAL STOTT
Forester, U. S. Forest Service
Region 9

COMPOSITE TREE STATUS CODES FOR CFI PLOT WORKTREE
STATUS CODE FOR
MEASUREMENT ONEDESCRIPTION OF CODESTREE
STATUS CODE FOR
MEASUREMENT TWO

1
2
3
4

Precommercial trees
Pulpwood trees
Sawlog trees
Cull trees

1
2
3
4

These codes apply to all tree cards at the first and all subsequent measurement periods.

-
-

Mortality trees
Cut trees

5
6

These codes apply to all mortality or cut trees at the second and all subsequent measurement periods. At the first measurement these trees were coded 1, 2, 3, or 4.

7
0

All trees in new plots
New trees in old plots

-
-

These codes are gang punched into the column for the first measurement after the second measurement has been made. The steps are as follows:

Plot master cards for new plots are X-punched over a specified column. This X-punch for new plots is reproduced, with the plot master information, into the tree detail cards. This X is ganged into the column for the tree status at measurement one. All tree detail cards are then sorted on this column. This separates out the X-punched cards, and the cards without any code number will reject. The X-punched cards are the trees in new plots and the rejects are the new trees in old plots, or the ingrowth trees.

Gang punch a 7 into the column for the first measurement to represent the trees in the new plots which were X-punched. Gang punch a 0 into the column for the first measurement to represent the new trees in old plots or the ingrowth trees.

-

Trees in discontinued plots

8

When plots are discontinued because of the sale or exchange of land, all trees should be coded 8 in the column for the tree status at the second measurement. Discontinued plots are few in number in more projects and the cards for these plots can be hand-separated after the plots have been sorted in tree and plot sequence. The 8 code is gang punched into these hand-separated cards.

THERE ARE MANY COMBINATIONS OF TREE STATUS CLASSES

1. New trees in old plots. These include composite tree status classes:

0 - 1	Ingrowth into pre-commercial
0 - 2 *	Ingrowth into pulpwood
0 - 3 *	Ingrowth into sawlogs
0 - 4 *	Ingrowth into cull trees

2. Pre-commercial trees in old plots. These include composite tree status classes:

1 - 1	Pre-commercial both measurements
1 - 2	Pre-commercial became pulpwood
1 - 3	Pre-commercial became sawlogs
1 - 4	Pre-commercial became cull trees
1 - 5	Pre-commercial became mortality
1 - 6	Pre-commercial became cut trees
1 - 8	Pre-commercial in discontinued plots

3. Pulpwood trees in old plots. These include composite tree status classes:

2 - 2 *	Pulpwood both measurements
2 - 3 *	Pulpwood became sawlogs
2 - 4 *	Pulpwood became cull trees
2 - 5 *	Pulpwood became mortality
2 - 6 *	Pulpwood became cut trees
2 - 8	Pulpwood in discontinued plots

4. Sawlog trees in old plots. These include composite tree status classes:

3 - 2 *	Sawlog became pulpwood
3 - 3 *	Sawlog both measurements
3 - 4 *	Sawlog became cull trees
3 - 5 *	Sawlog became mortality
3 - 6 *	Sawlog became cut trees
3 - 8	Sawlog in discontinued plots

5. Cull trees in old plots. These include composite tree status classes:

4 - 2	Cull trees became pulpwood
4 - 3	Cull trees became sawlogs
4 - 4 *	Cull trees both measurements
4 - 5 *	Cull trees became mortality
4 - 6	Cull trees became cut trees
4 - 8	Cull trees in discontinued plots

6. All trees in new plots. These include composite tree status classes:

7 - 1	New plots, pre-commercial trees
7 - 2	New plots, pulpwood trees
7 - 3	New plots, sawlog trees
7 - 4	New plots, cull trees

STATISTICAL PROCEDURE LEAFLET #7A SIMPLE FORMULA TO CALCULATE THE NUMBER OF PLOTS NEEDED FOR C.F.I.

Determining the number of plots to use for a continuous forest inventory is very unlike determining the number of plots to use for present volume in a particular forest at a given time with a certain set of static conditions. It is not a simple statistical calculation based upon a single estimated coefficient of variation. Besides volume, growth and mortality are to be measured as well as many continually changing conditions.

Since a simple statistical approach is not available, probably the best indicator from which to develop a simple formula is the result of the many considerations of those who now have active CFI programs. Based on the number of plots used on more than 50 ownerships involving over 20 million acres and 40,000 CFI plots, a simple formula which may be used to determine a reasonable number of plots for CFI is:

$$\text{NUMBER OF PLOTS} = 100 + .0025 \times (\text{Acres in the tract})$$

This formula may be used from 100 acres to $3\frac{1}{2}$ million acres. Below 100 acres requires some special considerations because 100 plots is about the minimum which should be used in any case. Above $3\frac{1}{2}$ million acres the number of plots calculated by the formula may become impractical of accomplishment.

On experimental areas and those connected with forest schools the number of plots calculated by the formula has been about doubled. On other areas, for trial purposes, about one-half this number have been used.

An easy way to use the formula is to:

- a. Point off two decimals in the acreage
- b. Divide this by 4
- c. Add 100

EXAMPLES:

For a 1500 acre tract:

- a. 15.00
- b. $15/4 = 4$
- c. 4 plus 100 = 104 plots.

For 56,000 acres:

- a. 560.00
- b. $560/4 = 140$
- c. 140 plus 100 = 240 plots.

For 1,200,000 acres:

- a. 12,000.00
- b. $12,000/4 = 3,000$
- c. 3,000 plus 100 = 3,100 plots.